

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:  
**BONHOMME**

Serial No. **Not yet assigned**

Filing Date: **Herewith**

For: **METHOD AND DEVICE FOR CHANNEL  
ESTIMATION, IN PARTICULAR FOR  
A CELLULAR MOBILE TELEPHONE**

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) EXPRESS MAIL NO: EL769467865US  
) DATE OF DEPOSIT: November 6, 2001

) NAME: Rey M. Sandoz

) SIGNATURE: [Signature]

PRELIMINARY AMENDMENT

Director, U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

Prior to the calculation of fees and examination of  
the present application, please enter the amendments and  
remarks set out below.

In the Claims:

Please cancel Claims 1 to 14.

Please add new Claims 15 to 41.

15. A method of estimating an impulse response of  
an information transmission channel in a signal propagation  
environment and comprising:

estimating the impulse response based upon a useful  
number of coefficients of the impulse response, the useful  
number of coefficients being a function of the signal  
propagation environment.

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16. The method of Claim 15 wherein estimating the impulse response comprises:

providing an initial estimate of the impulse response based upon a predetermined maximum number of the coefficients;

determining a time domain spreading parameter based upon the initial estimate;

using the time domain spreading parameter to determine the useful number of coefficients; and

providing a final estimate of the impulse response based upon the useful number of coefficients.

17. The method of Claim 16 wherein providing the final estimate comprises correcting the first estimate by cancelling a number of coefficients equal to a difference between the predetermined maximum number and the useful number of coefficients.

18. The method of Claim 16 wherein using the time domain spreading parameter to determine the useful number of coefficients comprises comparing the time domain spreading parameter with a plurality of predetermined spreading parameter values each corresponding to a different time domain spreading of the transmission channel.

19. A method of estimating an impulse response of an information transmission channel in a signal propagation environment and comprising:

determining a useful number of coefficients of the impulse response as a function of the signal propagation environment based upon a time domain spreading parameter; and

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estimating the impulse response based upon the useful number of coefficients.

20. The method of Claim 19 wherein determining the useful number of coefficients comprises comparing the time domain spreading parameter with a plurality of predetermined spreading parameter values each corresponding to a different time domain spreading of the transmission channel.

21. A device for estimating an impulse response of an information transmission channel in a signal propagation environment comprising:

a processing stage;

said processing stage comprising evaluation means for defining a useful number of coefficients of the impulse response as a function of the signal propagation environment and for estimating the impulse response based upon the useful number of coefficients.

22. The device of Claim 21 wherein said processing stage further comprises first estimating means for producing a first estimate of the impulse response of the transmission channel based upon a predetermined maximum number of the coefficients.

23. The device of Claim 22 wherein said evaluation means generate a time domain spreading parameter and determines the useful number of coefficients based thereon.

24. The device of Claim 23 wherein said processing stage further comprises second estimating means for deriving a

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final estimate of the impulse response based upon the useful number of coefficients provided by said evaluation means.

25. The device of Claim 24 wherein said second estimating means comprise correction means for providing the final estimate by correcting the first estimate by cancelling a number of coefficients equal to a difference between the predetermined maximum number and the useful number of coefficients.

26. The device of Claim 23 wherein said evaluation means comprise:

a memory having a plurality of predetermined spreading parameter values stored therein each corresponding to a respective time domain spreading of the transmission channel; and

a comparator for comparing the time domain spreading parameter with the predetermined spreading parameter values.

27. A device for estimating the impulse response of an information transmission channel in a signal propagation environment comprising:

an evaluator for determining a useful number of coefficients of the impulse response as a function of the signal propagation environment; and

estimation circuitry for estimating the impulse response based upon the useful number of coefficients.

28. The device of Claim 27 wherein said evaluator determines the useful number of coefficients of the impulse

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response based upon a predetermined maximum number of the coefficients.

29. The device of Claim 28 wherein said evaluator generates a time domain spreading parameter and determines the useful number of coefficients based thereon.

30. The device of Claim 29 wherein said estimation circuitry further derives a final estimate of the impulse response based upon the useful number of coefficients.

31. The device of Claim 30 wherein said estimation circuitry derives the final estimate by correcting the first estimate by cancelling a number of coefficients equal to a difference between the predetermined maximum number and the useful number of coefficients.

32. The device of Claim 27 further comprising a memory having a plurality of predetermined values of spreading parameters each corresponding to different time domain spreading of the transmission channel stored therein; and wherein said evaluator further comprises a comparator for comparing the time domain spreading parameter with the predetermined values.

33. A cellular telephone comprising:  
an antenna;

a receiver for receiving cellular signals via said antenna from a base station over an information transmission channel in a signal propagating environment; and

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a processing stage for estimating an impulse response of the information transmission channel the signal propagation environment and comprising evaluation means for defining a useful number of coefficients of the impulse response as a function of the signal propagation environment, and for estimating the impulse response based upon the useful number of coefficients.

34. The cellular telephone of Claim 33 wherein said processing stage further comprises first estimating means for producing a first estimate of the impulse response of the transmission channel based upon a predetermined maximum number of the coefficients.

35. The cellular telephone of Claim 34 wherein said evaluation means generate a time domain spreading parameter and determines the useful number of coefficients based thereon.

36. The cellular telephone of Claim 35 wherein said processing stage further comprises second estimating means for deriving a final estimate of the impulse response based upon the useful number of coefficients provided by said evaluation means.

37. The cellular telephone of Claim 36 wherein said second estimating means comprise correction means for correcting the first estimate by cancelling a number of coefficients equal to a difference between the predetermined maximum number and the useful number of coefficients.

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38. A computer-readable medium having computer-executable instructions for estimating an impulse response of an information transmission channel in a signal propagation environment by performing a step comprising:

estimating the impulse response based upon a useful number of coefficients of the impulse response, the useful number of coefficients being a function of the signal propagation environment.

39. The computer-readable medium of Claim 38 wherein estimating the impulse response comprises:

providing an initial estimate of the impulse response based upon a predetermined maximum number of the coefficients;

determining a time domain spreading parameter based upon the initial estimate;

using the time domain spreading parameter to determine the useful number of coefficients; and

providing a final estimate of the impulse response based upon the useful number of coefficients.

40. The computer-readable medium of Claim 39 wherein providing the final estimate comprises correcting the first estimate by cancelling a number of coefficients equal to a difference between the predetermined maximum number and the useful number of coefficients.

41. The computer-readable medium of Claim 39 wherein using the time domain spreading parameter to determine the useful number of coefficients comprises comparing the time domain spreading parameter with a plurality of predetermined

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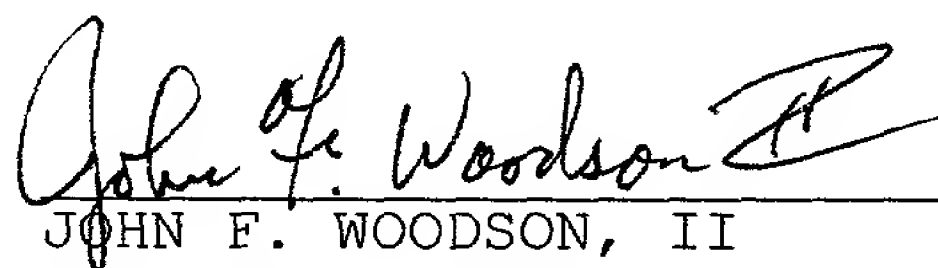
spreading parameter values each corresponding to a different time domain spreading of the transmission channel.

**REMARKS**

It is believed that all of the claims are patentable over the prior art. For better readability and the Examiner's convenience, the newly submitted claims differ from the translated counterpart claims which are being canceled. The newly submitted claims do not represent changes or amendments that narrow the claim scope for any reason related to the statutory requirements for patentability.

Accordingly, after the Examiner completes a thorough examination and finds the claims patentable, a Notice of Allowance is respectfully requested in due course. Should the Examiner determine any minor informalities that need to be addressed, he is encouraged to contact the undersigned attorney at the telephone number below.

Respectfully submitted,



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